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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,345	12/07/2003	Frank Lin	TOPP0028USA	1344
27765	7590	11/09/2005	EXAMINER	
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			LUND, JEFFRIE ROBERT	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/707,345	Applicant(s) LIN, FRANK	
	Examiner Jeffrie R. Lund	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: in paragraph 0005 line 12 "formeruses" should read --former uses--; and in paragraph 0007 lines 5 and 6 "three valves 12,14,16" should read --three valves 12,14,26-- (reference number 16 is the processing chamber).

Appropriate correction is required.

Claim Objections

2. Claim 2 is objected to because of the following informalities: in line 1 "reactoris" should read --reactor is--. Appropriate correction is required.
3. Claim 13 is objected to because of the following informalities: in line 1 "12,wherein" should read --12, wherein--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 12-20 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the connection of the third valve to the process chamber, the control of the third valve by the controller, the sequence of operation of the third valve, and the location of the third valve and the RPCS.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Watabe, US Patent 5,500,256.

Watabe teaches a PECVD reactor that includes: a normally closed first valve 17b for controlling the supply of SiH₄, a hydrogen based gas; a normally closed second valve 17a for controlling the supply of N₂O, a oxygen based gas; a logic circuit control unit 25 for controlling the valves; a process chamber 12 connected to the first and second valves and accommodating the gases to perform a deposition process; and MFCs 18c, 18b connected to the processing chamber and controlled by the controller. The first and second gas valves are not turned on simultaneously such that the first and second gases are inducted into the process chamber in separate intervals to perform their corresponding deposition processes. (Entire document, specifically, figure 2)

8. Claims 11-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Watabe, US Patent 5,500,256.

Watabe teaches a PECVD reactor that includes: a first valve (upstream from MFC 18a) for controlling the supply of SiH₄, a hydrogen based gas; a second valve (upstream from MFC 18b) for controlling the supply of N₂O, a oxygen based gas; a third valve (upstream from MFC 18c or 18d); a logic circuit control unit 25 for controlling the

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valves; a process chamber 12 connected to the first and second valves and accommodating the gases to perform a deposition process; and MFCs 18a- 18d connected to the processing chamber and controlled by the controller. The reactor is capable of supplying ozone or oxygen from the second valve, and TEOS from the third valve. The first, second, and third gas valves are capable of operating in the claimed manner. (Entire document, specifically, figure 2)

Alternately, it would have been obvious to supply the desired gas (i.e. SiH₄, ozone, oxygen, or TEOS) to the reactor through the first, second or third valves in the desired order to perform the desired deposition process. The motivation to supply the desired gases in the desired order is to use the apparatus, which is capable of many different processes, to perform a single desired process.

Furthermore, it has been held that: claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114. Watabe teaches all of the claimed structure.

9. Claims 1, 3, 4, and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated

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by Lee, US Patent 5,616,208.

Lee teaches a reactor that includes: a normally closed first valve 106B for controlling the supply of SiH_4 , a hydrogen based gas; a normally closed second valve 114; a logic circuit control unit 120 for controlling the valves; a process chamber 1 connected to the first and second valves and accommodating the gases to perform a deposition process; MFCs 113, 117, 105A-105D connected to the processing chamber and controlled by the controller; and a purge gas 109, 119. The first and second gas valves are not turned on simultaneously such that the first and second gases are inducted into the process chamber in separate intervals to perform their corresponding processes. (Entire document, specifically, figure 2)

10. Claims 5, 11, 12, 14, and 16-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Watabe, US Patent 5,500,256.

Lee teaches a PECVD reactor that includes: a first valve 106B for controlling the supply of SiH_4 , a hydrogen based gas; a second valve 114; a third valve 106A; a logic circuit control unit 120 for controlling the valves; a process chamber 1 connected to the first and second valves and accommodating the gases to perform a deposition process; MFCs 113, 117, 105A-105D connected to the processing chamber and controlled by the controller; and purge gases 109, 119. The reactor is capable of supplying ozone or oxygen from the second valve, and TEOS from the third valve. The first, second, and third gas valves are capable of operating in the claimed manner. (Entire document, specifically, figure 2)

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Alternately, it would have been obvious to supply the desired gas (i.e. SiH₄, ozone, oxygen, or TEOS) to the reactor through the first, second or third valves in the desired order to perform the desired deposition process. The motivation to supply the desired gases in the desired order is to use the apparatus, which is capable of many different processes, to perform a single desired process.

Furthermore, it has been held that: claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114. Lee teaches all of the claimed structure.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raoux et al, US Patent 6,041,734, in view of Lee, US Patent 5,616,208.

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Raoux et al teaches a PECVD chamber that includes: a gas supply system 89 that includes at least 3 gas sources 91A-91C and includes SiH_4 , hydrogen, ozone, and TEOS; a logic circuit controller 85 controlling the gas supply; a processing chamber 11 connected to the gas supply system; and a remote plasma cleaning source 4 located between the process chamber and the gas supply system. (Figure 1)

Raoux et al differs from the present invention in that Raoux et al does not teach a first, second, and third normally closed valves for controlling the first, second, and third gas flow rates; the sequence of operation of the valves; a MFC connected to the controller; or a purge step.

Lee was discussed above and includes a gas supply system with 6 valves and 6 MFCs for controlling 4 different gases supplied to a processing chamber, and a controller 120 for controlling the valves and MFCs.

The motivation for adding the gas control system of Lee in the apparatus of Raoux et al is to provide the apparatus of Raoux et al with a specific gas control system and required by Raoux et al but only generically described.

The motivation for controlling the valves to supply specific gases, i.e. SiH_4 , ozone, N_2 (purge), in a specific order is to use the apparatus of Raoux et al and Lee to perform a desired deposition process to deposit a desired layer or series of layers.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the gas supply system of Lee in the apparatus of Raoux et al, and to control the valves to supply the desired gases in the desired order to the apparatus Raoux et al and Lee.

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Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches the technological background of the invention. The cited art contains patents that could be used to reject the claims under 35 USC § 103. These rejections have not been made because they do not provide any additional or different teachings, and if they were applied, would have resulted in an undue multiplication or references. (See MPEP 707.07(g))

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeffrie R. Lund
Primary Examiner